

Lesson Plan - The Arrowhead: Emblem of the National Park Service

Overview: In this lesson students will learn about the mission of the National Park Service and how it relates to Sleeping Bear Dunes National Lakeshore through a guided exploration of elements represented on the NPS Arrowhead emblem.

Grade Level: 2-8

Duration: 1-2 class periods

Learning Objectives: After completing this lesson, the student will be able to

- explain the meaning of the five elements represented on the NPS arrowhead emblem.
- give examples of each of the elements as they apply to Sleeping Bear Dunes National Lakeshore.

Michigan Standards:

(Based on Michigan Grade Level Content Expectations)

As a result of activities in grades K-5, all students should be able to

- use historical thinking to understand the past in Michigan.
- understand how human activities help shape the Earth's surface.
- understand the effects of human-environment interactions.

As a result of activities in grades 6-8, all students should be able to

- use geographic themes, knowledge about processes and concepts to study the Earth.
- describe the physical characteristics of places.
- describe the human characteristics of places.
- describe the physical processes that shape the patterns of the Earth's surface.
- describe patterns, processes, and functions of human settlement.

Background Information:

There are two versions of this activity aimed at different age/ability levels. The version for younger students involves viewing a PowerPoint about the arrowhead emblem and Sleeping Bear Dunes, then creating their own emblem. The version for older students involves reading a brief piece about the significance of the arrowhead, then visiting the park website to find out how the arrowhead relates to Sleeping Bear Dunes. 4th and 5th grade teachers should examine both versions and decide which best matches the ability level of their students.

Although this lesson is intended as a pre-visit activity for field trip groups, it could also serve as an introduction to any NPS-related classroom activity such as research projects for older students.

Materials:

Grades 2-4: computer for presentation, data projector, *Arrowhead Intro PowerPoint (grades 2-4)*, copies of *Arrowhead Worksheet (grades 2-4)*

Grades 5-8: computer for presentation, data projector, at least 5 student computers (preferably 1 per student), *Arrowhead Background (grades 5-8)*, and copies of the 5 element worksheets

Procedure:

Grades 2-4

Part 1 – After distributing copies of *Arrowhead Worksheet (grades 2-4)* to each student, present *Arrowhead Intro PowerPoint (grades 2-4)* to the class using a data projector or similar means. After each slide is shown that explains a particular element of the emblem, brainstorm as a class how that element might relate to Sleeping Bear Dunes National Lakeshore. Depending on your proximity to the Lakeshore and whether or not students have visited previously, students may or may not be able to generate ideas. If they are having difficulty, leading questions or other hints may be helpful. For each element, after some ideas have been generated, proceed to the next slide, which will show some specific examples of how the element applies to Sleeping Bear Dunes. Allow students time to list examples on the worksheet for each element as you work through the slide show. Before showing the “pop quiz” slide, have students turn their worksheets over so they will have to try to describe the elements from memory.

Part 2 – Remind students that the NPS emblem was designed to represent ALL sites in the National Park system, and that many sites don’t actually have any of the examples represented on the emblem, such as bison and sequoia trees. Tell students to imagine that they have been hired to design a custom emblem that’s just for Sleeping Bear Dunes National Lakeshore. They will need to include each of the five elements, but using examples that can be found at Sleeping Bear Dunes. As they begin to plan, you may want to go back through the slides to help them visualize elements of their design. Have students draw their designs on the blank arrowhead provided on the back of the worksheet. Remind them that neatness counts, and that effective use of color can make a design more attractive.

Grades 5-8

Part 1 – Print copies or use a data projector to display the document titled *Arrowhead Background (grades 5-8)*, and have volunteers take turns reading.

Part 2 – Divide the class into five equal-sized groups. Each group will be responsible for performing online research to answer questions about one of the elements on the NPS arrowhead emblem as it relates to Sleeping Bear Dunes National Lakeshore. When the groups have been established, assign each group one of the elements and distribute copies of the appropriate worksheet to each member of that group. The URL address of each webpage is provided on the worksheet, but the webpages may also be accessed by using the navigation labels on the left side of this page: www.nps.gov/slbe (answers to the CULTURE questions are found under *History & Culture*; all others are found under *Nature & Science*). The extent to which groups are allowed to work cooperatively in completing their worksheet is up to the teacher.

Part 3 – Each group should share a summary of their findings with the rest of the class. The culminating question at the end of each worksheet can serve as the basis for a verbal summary by a representative from each group, or the teacher may elect to require a more elaborate method of reporting, such as a brief PowerPoint highlighting the group’s findings.

Assessment:

Grades 2-4

Students can demonstrate what they have learned by sharing and explaining their designs with the class. (If a document camera is available, designs should be displayed via data projector as they share.) After designs have been shared and collected, the teacher may elect to give a quiz by again displaying the real NPS emblem and having students describe briefly in writing what the elements represent.

Grades 5-8

A basic assessment of student learning can be as simple as having students write descriptions of the meaning of each element of the Arrowhead emblem, and giving one or two examples of how each applies to Sleeping Bear Dunes. Depending on the method of group reporting, the teacher may also choose to incorporate an effort grade to reward active participation.

Extensions:

Grades 5-8

- During the process of hunting for the answers to their questions, many students will find other things about the Lakeshore that intrigue them. Have students choose a park-related topic to investigate in depth, then create a product such as a poem, the retelling of a story, a drawing, report, etc. In-depth information on many park-related subjects can be found in an excellent series of Visitor Guides provided by Friends of Sleeping Bear at <http://friendsofsleepingbear.org/projects/booklets/>
- Have students explore statistics about the various types and numbers of parks within their county, state, or country.

The Arrowhead: Emblem of the National Park Service

BACKGROUND

There are thousands of parks, monuments, and historic sites in the U.S., ranging from neighborhood playgrounds to some of the most spectacular landscapes on earth. Those that are important to the greatest number of people – those that have *national significance* – are managed by the National Park Service (NPS), part of the federal government. The NPS has adopted the arrowhead as its *emblem*, to identify people and places that are associated with the NPS.



Each element on the arrowhead emblem represents a feature protected within NPS sites: the **sequoia tree** represents all plants; the **bison** represents all animals; the **mountain** represents all land forms; the **lake** represents all waters; and the **arrowhead outline** represents culture and history.

These five elements are *symbolic*. For example, although bison might not live in a particular park, the bison is a reminder that each park has a duty to protect the animals that can be found within its boundaries. The same is true for each of the other elements represented on the emblem.

Although every NPS site is unique, all are managed for the same purpose: “...to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.”

Sleeping Bear Dunes National Lakeshore is a spectacular landscape with unique plants and animals, water and landforms, and historic cultural features that must be protected and preserved.

TASK

You will be working in groups to find out how the five elements of the arrowhead emblem relate to Sleeping Bear Dunes National Lakeshore. After your group has been assigned one of the elements - *plants, animals, landforms, water, or culture* – you will explore the Sleeping Bear Dunes National Lakeshore website to answer questions about your element as it relates to the Lakeshore. Finally, each group will share some of its findings with the class.

Sleeping Bear Dunes National Lakeshore: PLANTS

Many of the plants found within the Lakeshore have special adaptations that allow them to survive the harsh environment of the dunes. Use the links provided to help you answer the following questions and learn about the unique plants of Sleeping Bear Dunes.

Link: <http://www.nps.gov/slbe/naturescience/plants.htm>

1. Complete this sentence as it appears on the website: “*The story of the plants in the park is a story of ...*”

2. The Manitou Islands have very different types of vegetation. Why?

Link: <http://www.nps.gov/slbe/naturescience/ferns.htm>

3. How many species of “true ferns” can be found within the Lakeshore?

Link: <http://www.nps.gov/slbe/naturescience/freshwaterplants.htm>

4. Invasive plants can sometimes outcompete and replace native plants. How many species of invasive plants are mentioned on this page?

Link: <http://www.nps.gov/slbe/naturescience/grasses.htm>

5. Sometimes non-native species become important parts of an ecosystem. How have introduced grasses become important within the Lakeshore?

Link: <http://www.nps.gov/slbe/naturescience/lichens.htm>

6. Lichens are actually two organisms (fungus and algae) living in a *symbiotic* relationship. Studying the variety and health of lichens within the Lakeshore can give scientists an indication of what?

Link: <http://www.nps.gov/slbe/naturescience/treesandshrubs.htm>

7. What characteristics of the Lakeshore have helped the beech/maple northern hardwood forest reach its climax?

8. The foredune area provides some of Michigan's best habitat for which threatened species?

Link: <http://www.nps.gov/slbe/naturescience/wildflowers.htm>

9. Name the season or month during which each of the following flowers may be found within the Lakeshore:

yellow puccoon: _____ witch hazel: _____

Link: <http://friendsofsleepingbear.org/wildflower-database/>

10. This site lists over 150 wildflowers that can be found within the Lakeshore. Name the only two that have *green* blossoms.

11. OPINION: Based on what you've learned in this activity, write a brief paragraph describing how PLANTS are protected and preserved by Sleeping Bear Dunes National Lakeshore.

Sleeping Bear Dunes National Lakeshore: ANIMALS

A surprising array of animal species can be found within the Lakeshore including amphibians, birds, fish, mammals, mollusks, and reptiles. Use the links provided to help you answer the following questions and learn more about the wildlife of Sleeping Bear.

Link: <http://www.nps.gov/slbe/naturescience/amphibians.htm>

1. How many varieties of salamanders can be found within the Lakeshore?

Link: <http://www.nps.gov/slbe/naturescience/birds.htm>

2. Name a bird species whose numbers are declining elsewhere, but is readily found in grassland meadows within the Lakeshore.

Link: <http://www.nps.gov/slbe/naturescience/pipingplover.htm>

3. Sleeping Bear Dunes National Lakeshore includes some of the few nesting sites of the *piping plover*, an endangered shorebird. How many nesting pairs are there in the entire Great Lakes area?

Link: <http://www.nps.gov/slbe/naturescience/fish.htm>

4. What are alewives, and how did they get into Lake Michigan?

5. What species were introduced into the lake to help reduce alewife numbers?

Link: <http://www.nps.gov/slbe/naturescience/mammals.htm>

6. The activities of which mammal become evident when the snow melts each spring?

7. Name a species of mammal that has *benefitted* from human activity within the park.

Link: <http://www.nps.gov/slbe/naturescience/whitetaildeer.htm>

8. What kinds of problems did deer create on North Manitou Island?

Link: <http://www.nps.gov/slbe/naturescience/mollusks.htm>

9. How many known native species of mollusks are there in North America, and how many are considered endangered, threatened, or of special concern?

10. What are some reasons that fresh water clam populations are declining?

Link: <http://www.nps.gov/slbe/naturescience/reptiles.htm>

11. Why are so few reptile species found on the islands ?

12. How many of the reptile species found within the Lakeshore are poisonous?

13. OPINION: Based on what you've learned in this activity, write a brief paragraph describing how ANIMALS are protected and preserved by Sleeping Bear Dunes National Lakeshore.

Sleeping Bear Dunes National Lakeshore: LANDFORMS

Dunes are more than just huge piles of sand. What we see today is the result of thousands of years of deposition and erosion, and the process is still happening! Use the links provided to help you answer the following questions and discover more about this unique landscape.

Link: <http://www.nps.gov/slbe/naturescience/glaciers.htm>

1. How many states were at least partially covered by the most recent glacier?

2. How long ago did the last of the glaciers melt away in this area?

3. What is a *moraine*?

4. What is responsible for forming the great headland bluffs in this area, such as Empire bluffs, Sleeping Bear bluffs, and Pyramid Point?

5. In what direction do the prevailing winds blow along the Lake Michigan shoreline?

6. What are the names of the four ice ages during which this area was covered by glaciers?

Link: <http://www.nps.gov/slbe/naturescience/sanddunes.htm>

8. What is a *perched dune*?

9. How large is the Sleeping Bear Plateau?

10. As you move inland from the beaches you encounter “_____dunes”, with pioneer vegetation that is adapted to the dry and windy conditions.

11. Further inland you will find “_____dunes” with more mature and stabilizing trees and shrubs.

12. What is responsible for trapping and holding sand in place?

13. What is a “skeletal forest”?

14. OPINION: Based on what you’ve learned in this activity, write a brief paragraph describing how LANDFORMS are protected and preserved by Sleeping Bear Dunes National Lakeshore.

Sleeping Bear Dunes National Lakeshore: WATER

None of the features that make Sleeping Bear Dunes National Lakeshore special would exist without water! In addition to the shoreline itself there are rivers, streams, lakes, ponds, springs, wetlands, marshes, and swamps. Use the links provided to help you answer the following questions about water in our park.

Link: <http://www.nps.gov/slbe/naturescience/lakesandponds.htm>

1. How many lakes and ponds are there within the park?

2. What kinds of things pose a risk to the health of these ecosystems?

Link: <http://www.nps.gov/slbe/naturescience/rivers.htm>

3. What are the names of the rivers that flow within the Lakeshore?

4. What are the names of the streams that flow within the Lakeshore?

5. What mammals can sometimes be seen swimming in the rivers and streams?

Link: <http://www.nps.gov/slbe/naturescience/springs.htm>

6. Springs provide habitat within the Lakeshore for which rare flower?

7. What is it about the springs on the Manitou Islands that make them important frog and salamander breeding habitat?

Link: <http://www.nps.gov/slbe/naturescience/wetlands.htm>

8. How many acres of wetland habitat have been identified within the Lakeshore?

9. How were they created?

Link: <http://www.nps.gov/slbe/naturescience/beaches.htm>

10. How many miles of shoreline are located within the Lakeshore?

11. Why is the water becoming clearer?

Link: <http://www.nps.gov/slbe/naturescience/coasts.htm>

12. How does wave action affect the shoreline?

13. In which direction does the current cause sand and gravel to move along the shoreline?

14. OPINION: Based on what you've learned in this activity, write a brief paragraph describing how WATER is protected and preserved by Sleeping Bear Dunes National Lakeshore.

Sleeping Bear Dunes National Lakeshore: CULTURE

Humans have lived in and around Sleeping Bear Dunes National Lakeshore for thousands of years. The area was first inhabited by Native Americans, and later by European immigrants. Use the links provided to help you answer the following questions about their history.

Link: <http://www.nps.gov/slbe/historyculture/nativeamericans.htm>

1. What did the earliest inhabitants use this area for?

2. Who was responsible for driving the local tribes out of Michigan during the 17th century?

3. What was the name of the treaty under which the Chippewa and Ottawa ceded to the United States the northwestern lower peninsula, including the Sleeping Bear Dunes area?

Link: <http://www.nps.gov/slbe/historyculture/explorers.htm>

4. Who first described a dune along Lake Michigan's eastern shore as being "shaped like a reclining animal"?

Link: <http://www.nps.gov/slbe/historyculture/dkhday.htm>

5. Why did David Henry Day originally move to Glen Haven?

6. In your opinion, what is D.H. Day's greatest achievement?

Link: <http://www.nps.gov/slbe/historyculture/kelderhouse.htm>

7. Why were the dock and sawmill at Port Oneida eventually sold?

Link: <http://www.nps.gov/slbe/historyculture/piercestocking.htm>

8. What is the original name of the drive now known as *Pierce Stocking Scenic Drive*?

Link: <http://www.nps.gov/slbe/historyculture/aran.htm>

9. Some of the Ghost Towns in the Sleeping Bear area have unpleasant histories. The little town of Aral was the site of the first _____ in Benzie County.

Link: <http://www.nps.gov/slbe/historyculture/glenhaven.htm>

10. Who bought the town of Glen Haven in 1878, and why?

Link: <http://www.nps.gov/slbe/historyculture/lifesavingstation.htm>

11. What device was used by the U.S. Life-Saving Service to shoot a rescue line from shore to a stranded ship?

12. In 1915, the U.S. Life-Saving Service was merged with the Revenue Cutter Service to create what?

Link: <http://www.nps.gov/slbe/historyculture/lighthousehistory.htm>

13. What type of lens did U.S. lighthouses begin using in 1852?

Link: <http://www.nps.gov/slbe/historyculture/stories.htm>

14. According to legend, who created the islands and the dune?

15. OPINION: Based on what you've learned in this activity, write a brief paragraph describing how CULTURE is protected and preserved by Sleeping Bear Dunes National Lakeshore.

The Arrowhead



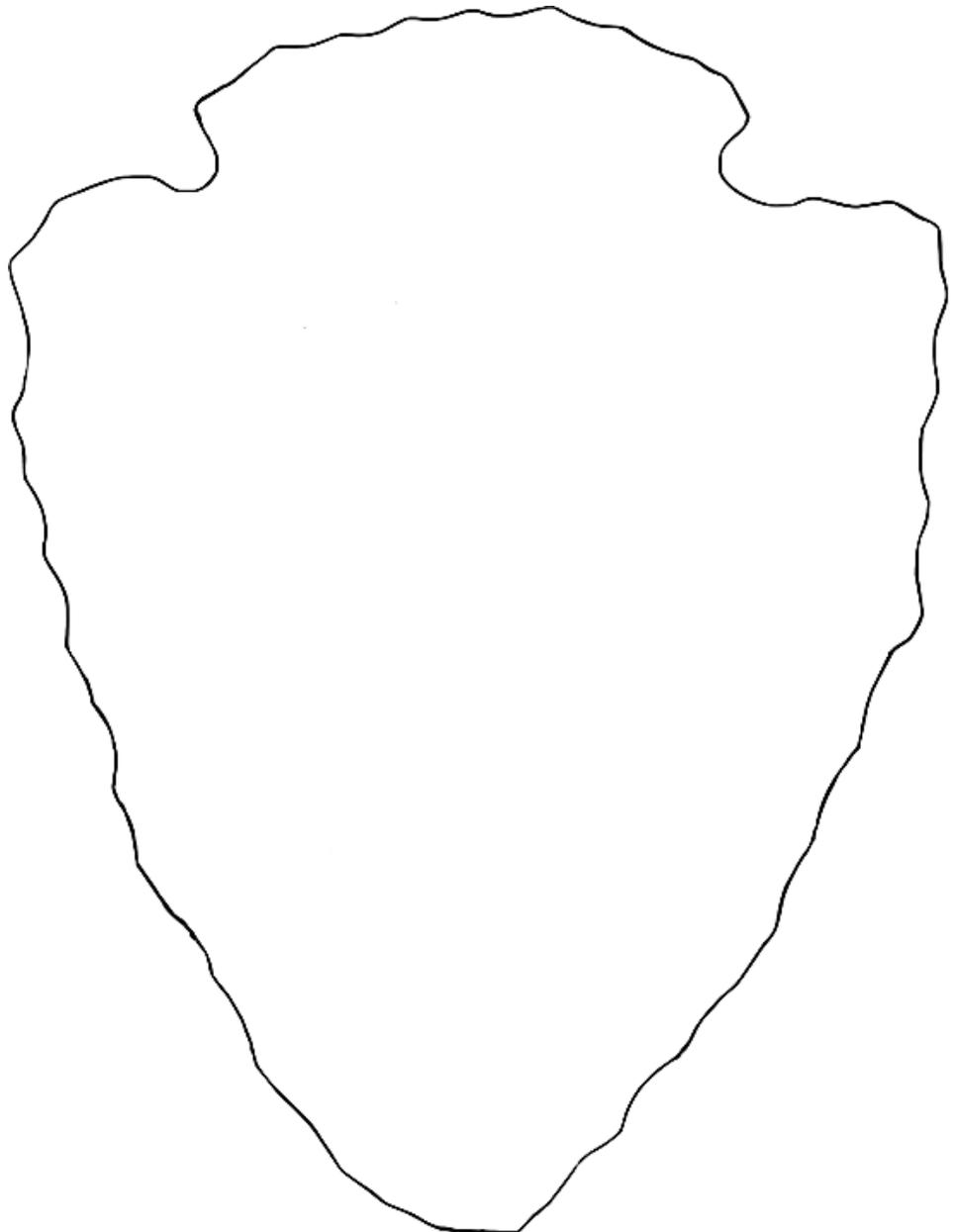
Sleeping Bear Dunes National Lakeshore protects many resources such as the dunes, Lake Michigan shoreline, piping plovers, pitcher's thistle, and historic farms.

ACTIVITY

Pretend you've been hired to design an emblem just for Sleeping Bear Dunes National Lakeshore. What items will you choose to represent land, water, plants, animals, and culture? Use the blank arrowhead to create your design.

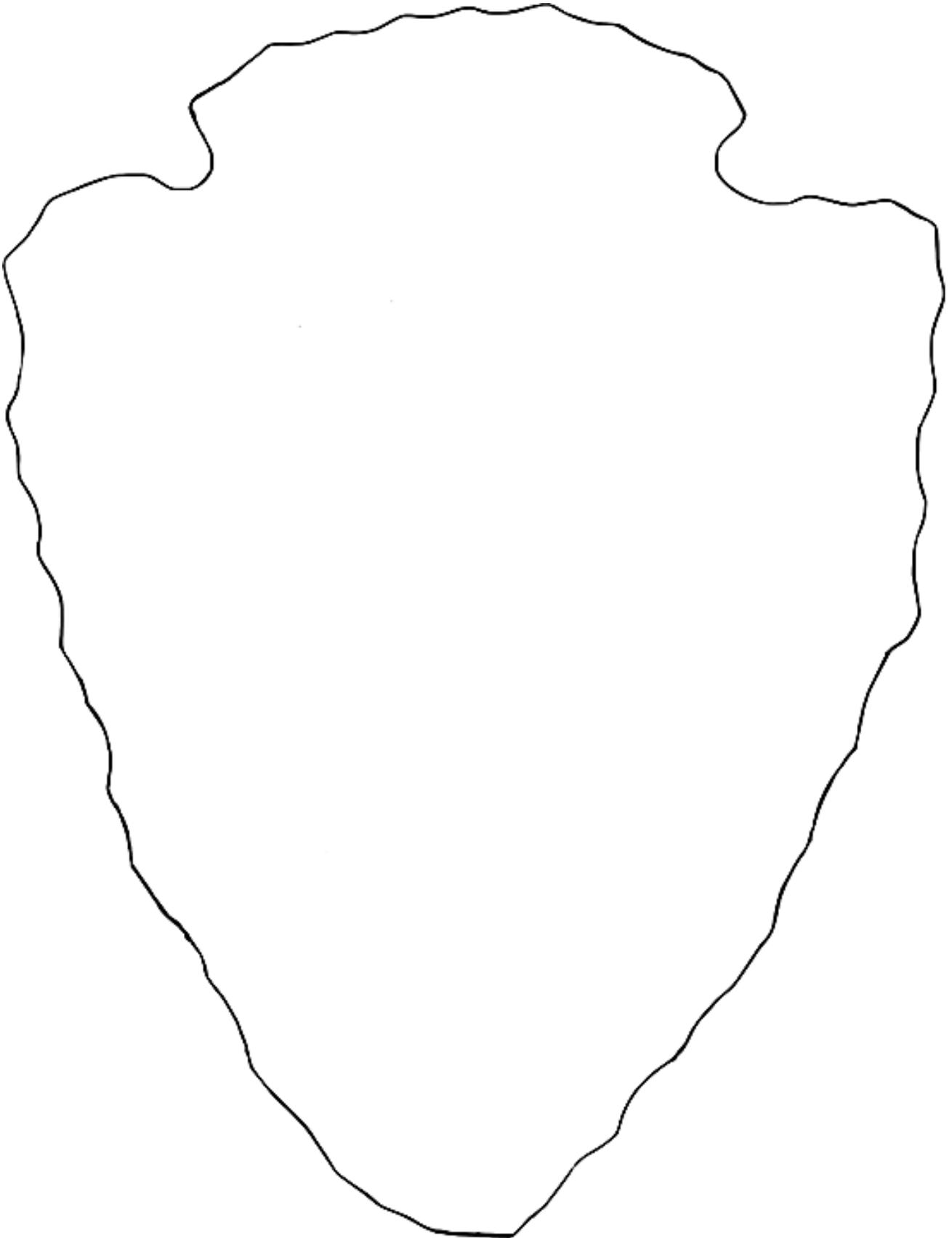
Here is the National Park Service arrowhead emblem. Each item in the arrowhead represents a feature protected within national park sites.

- ❖ the **sequoia tree** represents all plants
- ❖ the **bison** represents all animals
- ❖ the **mountain** represents all land forms
- ❖ the **lake** represents all waters
- ❖ the **arrowhead outline** represents culture and history



ACTIVITY

Pretend you've been hired to design a custom emblem just for Sleeping Bear Dunes National Lakeshore. What things will you choose to represent each of the five elements? Use the blank arrowhead to create your design.



The Arrowhead: Emblem of the National Park Service



This is the National Park Service arrowhead emblem. Each element of the arrowhead represents a feature protected within National Park Service sites. As you watch the PowerPoint, fill in the blanks below.

The **sequoia tree** represents _____

Examples from Sleeping Bear Dunes: _____

The **bison** represents _____

Examples from Sleeping Bear Dunes: _____

The **mountain** represents _____

Examples from Sleeping Bear Dunes: _____

The **lake** represents _____

Examples from Sleeping Bear Dunes: _____

The **arrowhead outline** represents _____

Examples from Sleeping Bear Dunes: _____

ACTIVITY

Pretend you've been hired to design a custom emblem just for Sleeping Bear Dunes National Lakeshore. What things will you choose to represent each of the five elements? Use the blank arrowhead to create your design.

